

Bureau of Standards (Div. VIII-3)
Department of Commerce,
Washington, D. C.

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Letter Circular VIII-4
Revised July 26, 1920.

SOURCES OF INFORMATION AND DATA ON THE PROPERTIES OF METALS AND ALLOYS.

The Bureau receives many requests for general and comprehensive information on the properties of metals and alloys; general requests of this sort for such a volume of information it is really possible to answer only with a statement of sources where the information may be obtained. This letter circular attempts to give a working bibliography of reference and handbooks on this subject. The Bureau itself is preparing circulars dealing with the properties of individual metals and alloys but these are as yet too few to permit a general circular to be based on them dealing with all metals and alloys.

The sources below are arranged topically, the reference books mentioned should be available in any good technical or scientific library. Mechanical properties of such materials are most excellently described by standard specifications for the materials such as those of the American Society for Testing Materials.

Date of
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- (5) 1916 MECHANICAL ENGINEERS' HANDBOOK; McGraw-Hill Book Co. Inc., New York City.
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- (10) 1911 HUTTE, pts. I, II, III; Wilhem Ernst & Sohn, Berlin.
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- (12) 1918 MINERAL INDUSTRY; McGraw-Hill Book Co., New York.
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(17) 1919 Gulliver, G. H., METALLIC ALLOYS; Chas. Griffin & Co. Ltd., London.
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(19) 1914 Hofman, H. O., METALLURGY OF COPPER; McGraw Hill Book Co., Inc., New York City.
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- (49) 1918 Hatfield, W. H., CAST IRON IN THE LIGHT OF RECENT RESEARCH; Chas. Griffin & Co., London.
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		1884	Charleton, G. A., TIN, ARSENIC, BISMUTH, AND WOLFRAM; E. & F. Spon, Ltd., London.
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	(61)	1911	Bouchonnet, A., ZINC, CADMIUM, CUIVRE, MERCURE; O. Doin et fils, Paris.
Chromium	(62)	1910	Ouvar, L.V.R., INDUSTRIES DU CHROME, DU MANGANESE, DU NICKEL ET DU COBALT; O. Doin et fils, Paris.
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Copper		1914	Hofman, (20)
Gold	(63)	1915	Rose, T. R., THE PRECIOUS METALS; D. Van Nostrand Co., New York City.
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Iron	(64)	1918	Carnegie, D., LIQUID STEEL; Longmans, Green & Co., New York City.
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Lead	(66)	1918	Hofman, H. O., METALLURGY OF LEAD; McGraw-Hill Book Co., New York City.
	(67)	1910	Collins, H. F., THE METALLURGY OF LEAD; C. Griffin & Co., London.
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| Tungsten | (75) | 1911 Mennicke, H., DIE METALLURGIE DES WOLFRAMS; M. Krayn, Berlin. |
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- (129) 1884- ENGINEERING INDEX; Now published in Mechan-
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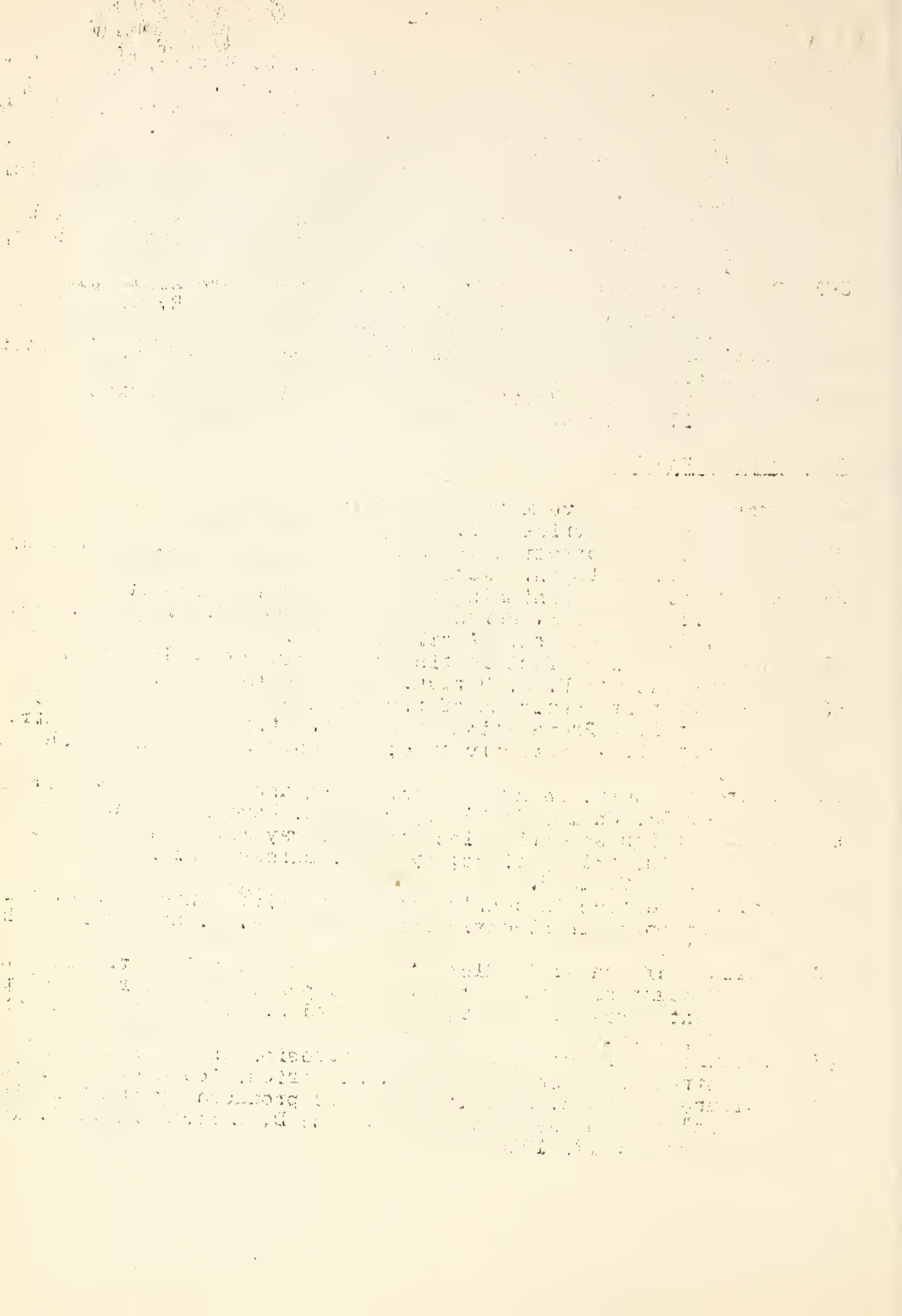
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- 105 Radiation constants of metals; by W. W. Coblentz, August 22,
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- 109 Testing of transformer steel; by M. G. Lloyd and J. V. S.
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- 120 The thermoelectric properties of tantalum and tungsten; by
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- 147 Temperature coefficient of resistance of copper; by J. H.
Dellinger, July 13, 1910.
- 148 Electrical conductivity of commercial copper; by F. A. Wolff
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- 205 Melting points of refractory elements; I, Elements of atomic
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- 213 Critical ranges A2 and A3 of pure iron; by G. K. Burgess and
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- 224 Emissivity of metals and oxides; I, Nickel oxide (NiO) in
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May 30, 1914.
- 236 Electrical resistance and critical range of pure iron; by
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- 242 Emissivity of metals and oxides II; Measurements with micro-pyrometer; by G. K. Burgess and R. G. Waltenberg. October 24, 1914.
- 243 Emissivity of metals and oxides: III, Total emissivity of platinum and relation between total emissivity and resistivity; by Paul D. Foote. January 30, 1915.
- 245 Temperature coefficient of magnetic permeability within working range; by Raymond L. Sandford. January 30, 1915.
- 249 Emissivity of metals and oxides; IV, Iron oxide; by George K. Burgess and Paul D. Foote. June 24, 1915.
- 250 Characteristics of radiation pyrometers; by George K. Burgess and Paul D. Foote. August 10, 1915.
- 254 Study of quality of platinum ware; by George K. Burgess and P. D. Sale, August 25, 1915.
- 266m Preparation of pure iron and iron-carbon alloys, by J. R. Cain, E. Schramm, and H. E. Cleaves, February 29, 1916.
- 272 Correlation of magnetic and mechanical properties of steel; by Charles W. Burrows. March 29, 1916.
- 280 Further experiments of volatilization of platinum; by G. K. Burgess and R. G. Waltenberg. June 16, 1916.
- 294 Freezing point of mercury; by R. M. Wilhelm. October 26, 1916.
- 296 Thermoelectric measurement of critical ranges of pure iron; by George K. Burgess and H. Scott. November 22, 1916.
- 300 Emissivity of Straight and Helical Filaments of Tungsten; by W. W. Coblentz. June 8, 1917.
- 307 Note on Electrical Conduction in Metals at Low Temperatures; by Francis B. Silsbee. July 23, 1917.
- 308 The Reflecting Power of Tungsten and Stellite by W. W. Coblentz and W. B. Emerson, August 10, 1917.
- 321 Thermal Expansion of Alpha & Beta Brass between 0° and 600°C, in Relation to the Mechanical Properties of Heterogeneous Brasses of the Muntz Metal Type by Paul D. Merica and L. W. Schad. May 9, 1918.
- 332 Preliminary Determination of the Thermal Expansion of Molybdenum by Lloyd W. Schad and Peter Hildner. January 29, 1919.
- 335 The Effect of Rate of Temperature Change on the Transformations in an Alloy Steel, by H. Scott. July 10, 1919.
- 336 A Simplification of the Inverse-Rate Method for Thermal Analysis, by P. D. Merica, July 11, 1919.
- 337 Constitution and Metallography of Aluminum and its Light Alloys with Copper and with Magnesium, by P. D. Merica, R. G. Waltenberg and J. R. Freeman, Jr. August 16, 1919.
- 342 Reflecting Power of Stellite and Lacquered Silver, by W. W. Coblentz and H. Kahler. September 11, 1919.
- 343 Location of Flaws in Rifle-Barrel Steel by Magnetic Analysis by R. L. Sanford and Wm. B. Kourbenhoven, October 3, 1919.
- 346 Oxygen Content by the Ledebur Method of Acid Bessemer Steels Deoxidized in Various Ways, by J. R. Cain and Earl Pettijohn. November 11, 1919.

- 347 The Heat Treatment of Duralumin, by P. D. Merica, R. G. Waltenberg and H. Scott, November 15, 1919.
- 348 Use of a Modified Rosenhain Furnace for Thermal Analysis by H. Scott and J. R. Freeman, October 24, 1919.
- 350 Equilibrium Conditions in the System Carbon, Iron Oxide, and Hydrogen in Relation to the Ledebur Method for Determining Oxygen in Steel, by J. R. Cain, November 10, 1919.
- 356 Notes on the Microstructure of Iron and Mild Steel at High Temperatures, by Henry S. Rawdon and H. Scott. March 15, 1920.
- 363 Preparation and Reflective Properties of Some Alloys of Aluminum with Magnesium and with Zinc, by R. G. Waltenberg and W. W. Coblenz. February 12, 1920.
- 376 Critical Range of Some Commercial Nickel Steels, by H. Scott April 6, 1920.
- 377 Intercrystalline Brittleness of Lead, by H. S. Rawdon. April 6, 1920.

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- 11 Comparison of five methods used to measure hardness; Ralph P. Devries. July 22, 1912.
- 25 Electrolytic corrosion of iron in soils; by Burton McCollum and K. H. Logan. June 12, 1913.
- 38 Observations on finishing temperatures and properties of rails; by G. K. Burgess, J. J. Crowe, H. S. Rawdon, and R. G. Waltenberg. April 28, 1914.
- 53 Investigation of fusible tin boiler plugs; by George K. Burgess and P. D. Merica. October 15, 1915.
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- 61 Some foreign specifications for railway materials: Rails, wheels, axles, tires; by G. K. Burgess and P. D. Merica, April 20, 1916.
- 62 Modern practice in construction and maintenance of rail joints and bonds in electric railways; by E. R. Shepard, March 10, 1916.
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- 83 Failure of brass: 2, Effect of corrosion on ductility and strength of brass; by Paul D. Merica, November 14, 1916.
- 84 Failure of brass: 3, Initial stress produced by the "burning in" of manganese bronze; by Paul D. Merica and C. P. Karr November 17, 1916.



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- 01 Tests of Large Bridge Columns, by J. H. Griffith and J. C.
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- 03 Typical Cases of the Deterioration of Muntz Metal (60:40
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- 09 Conservation of Tin in Bearing Metals, Bronzes and Solders;
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The first part of the paper is devoted to a general
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